



Space Launch System

Highlights

April 2012



A technician makes final adjustments before booster avionics are tested.
Photo credit: NASA/ATK

Major Life-Cycle Review Underway

The SLS Program has completed the first step in its combined System Requirements Review/System Definition Review (SRR/SDR), a focused technical evaluation of the program's capability to meet agency and mission directorate goals, objectives, and requirements. The final step will be an integrated assessment in summer 2012 of technical and programmatic cost, schedule and risk.

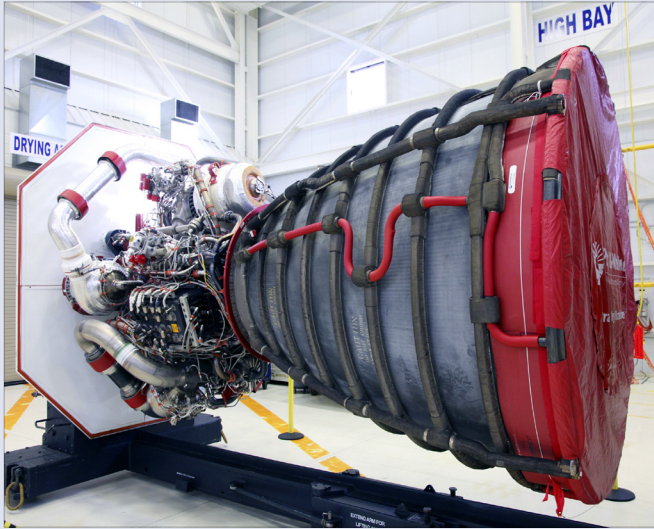
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Successful Test for Booster Avionics

Flight Control Test 1 was successfully conducted by ATK on Mar. 28 in Promontory, Utah. The test set-up combined a new avionics subsystem with a thrust vector control system from the space shuttle's solid rocket boosters, which will be used to guide five-segment solid rocket boosters during the first two flights of the SLS 70 metric ton (t) rocket. This test is part of a series being conducted to reduce risk and demonstrate the avionics subsystem design early in the booster's development life cycle.



SLS Chief Engineer Garry Lyles consults with Program Manager Todd May during a key SLS milestone review.
Photo credit: NASA/MSFC



RS-25 engine is prepared for shipment.
Photo credit: NASA/KSC

RS-25 Engines Move to Stennis

NASA has safely relocated 17 space shuttle main engines – including 15 flight engines and 2 test engines – from Kennedy Space Center in Cape Canaveral, Fla. to storage at Stennis Space Center near Bay St. Louis, Miss. The final shipment was Engine 2059, which arrived on Apr. 10. Built by Pratt & Whitney Rocketdyne of Canoga Park, Calif., the mighty RS-25 engine was used by NASA's Space Shuttle Program with 100 percent mission success. Now it will power the SLS core stage. William Gerstenmaier, NASA's Associate Administrator for the Human Exploration and Operations Mission Directorate, noted that the move "represents a significant cost savings to the SLS Program by consolidating SLS engine assembly and test operations at a single facility."

Major Life-Cycle Review

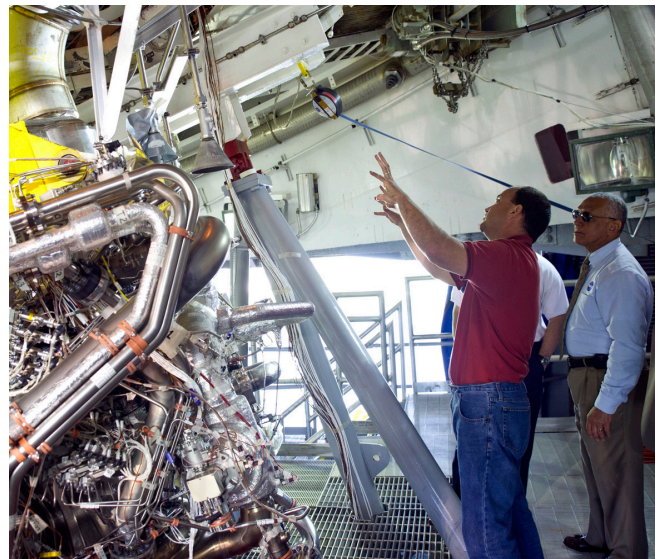
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"Completion of this first step of reviews moves the nation's first deep space rocket from concept development to preliminary design," said Todd May, SLS program manager.

Second Round of J-2X Testing Begins

The next round of testing on the J-2X rocket engine was kicked off on April 26. J-2X development engine E10001 has been fitted with a nozzle extension and returned to the A-2 Test Stand at Stennis Space Center. After sea-level testing last year, it was removed to prepare both the engine and test stand for 16 tests that will simulate flight conditions at high altitude, where atmospheric pressure is low. The J-2X engine will power the evolved SLS 130-t rocket's upper stage, which ignites at altitude in flight after the core stage is jettisoned and discarded.

"The first round of testing helped us get to know the engine, how it operates and its basic performance characteristics," said Tom Byrd, J-2X engine lead in the SLS Liquid Engines Office. "Now, we're looking forward to testing J-2X in the SLS flight configuration."



NASA Administrator Charles Bolden examines the first J-2X development engine at the A-2 Test Stand. The prime contractor is Pratt & Whitney Rocketdyne of Canoga Park, Calif.
Photo credit: NASA/SSC

"This checkpoint gives us a mature understanding of the requirements, solidifies that the vehicle concept design will meet all the requirements of the program and mission, and signals that SLS is ready to begin engineering design activities."

SLS and GSDO Meet at Kennedy Space Center

The SLS Stages Office and the Ground Systems Development and Operations (GSDO) Program organized a technical interchange meeting at Kennedy Space Center on Apr. 9–11. This working-level forum allowed the SLS Stages Office and the SLS Ground Operations Liaison Office (GOLO) to discuss with GSDO how an umbilical system for the SLS core stage might be designed to effectively interface with ground systems at the launch pad.

“This team has come a long way toward simplifying the interfaces between the vehicle and the launch infrastructure,” said Tony Lavoie, SLS Stages manager. GSDO provided information on components and connectors, ground system designs, and qualification test options for the umbilical plates. Prime contractor Boeing presented architectural overviews of main propulsion, thrust vector control and avionics systems, along with design information on purges, vents and the hazardous gas detection system, as well as umbilical plate functions, locations and plate layouts. “Face-to-face meetings such as this help us streamline the design and decision-making process,” added Brian Matisak, SLS GOLO manager.



Potential umbilical interface designs are considered for the SLS core stage. Artist's concept: NASA/MSFC



SLS Visits Smithsonian with Space Shuttle *Discovery*

Left: A young explorer gets hands-on experience of the SLS rocket at an event celebrating the arrival of space shuttle *Discovery* at the Smithsonian's Steven F. Udvar-Hazy Center near Washington, D.C. on Apr. 19. He's learning all about the future of U.S. spaceflight from Twila Schneider, an SLS communications coordinator. Photo credit: NASA/MSFC

Right: A 1:50 scale model of the SLS 70-t rocket is assembled by Barry Howell, an Exhibits Program model maker at Marshall. Photo credit: NASA/MSFC





Tim Flores, SLS Advanced Development deputy manager, tells eager students about the SLS rocket in Morris Auditorium at Marshall. *Photo credit: NASA/MSFC*



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Student Launch Projects Fly High at Marshall

Each year, Marshall hosts the NASA Student Launch Projects (SLP) competition, challenging teams to design, build and launch a reusable rocket with a scientific or engineering payload to 1 mile above ground level.

This year, over 600 students came to Huntsville, Ala. from middle schools, high schools and colleges across the country to participate from Apr. 19–22. They attended special SLS presentations made by Tim Flores, SLS Advanced Development deputy manager; Sheri Kittredge, SLS Liquid Engines deputy manager; and Mike Rabban, an SLS systems engineer, as well as toured Center facilities. On Apr. 22, hundreds of spectators came out to Bragg Farms in Toney, Ala. to root for the students on launch day while the UStream service provided live streaming video to over 56,000 viewers online.



A student rocket takes flight on Launch Day. Winning teams will be announced in May 2012. *Photo credit: NASA/MSFC*